Electric Mobility in Africa – Opportunities and Challenges

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- Setting the scene
- Opportunities and challenges for electric cars in Africa
- The UN Environment Electric Mobility Program

Growth of motorcycle market in Kenya

The EastAfrican NEWS BUSINESS OPED SCIENCE & HEALTH MAGAZINE RWANDA TODAY

Motorcycles set to become main mode of transport in Africa

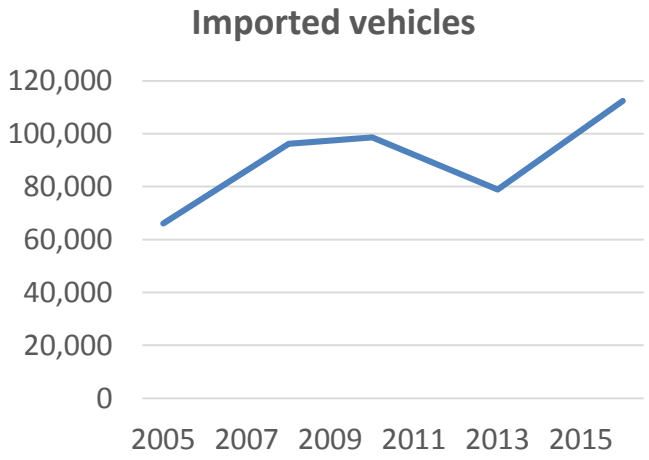
MONDAY SEPTEMBER 26 2016

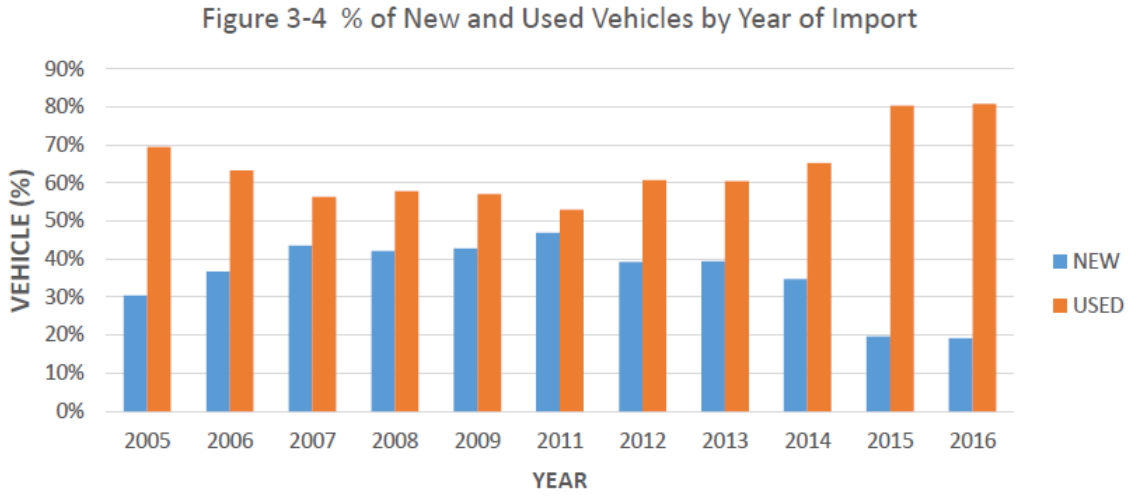
Motorcycle taxi operators wait for customers at Luanda market, Vihiga County in western Kenya. The explosion of motorcycles in Africa is projected to escalate to new levels as two-wheelers become the main means of transport for the majority of the continent's population. PHOTO | FILE

- **Sales of motorcycles in Kenya almost tripled between 2008 and 2014**
- **Cheap motorcycles mainly from China and India flood the market**

	Displacement	Price in USD
Suzuki EN 125 HU	125	2300
Suzuki GT 125	125	1850
Suzuki Hayate GE 100	110	1400
Evalast Kuga	150	1200
Suzuki GD 110	110	1200
Bajaj Boxer	150	1129
TVS Star	125	1085
King Bird	150	1046
Hero Dawn	125	1039
Yamaha Crux	106	999
TVS Star LX 100	100	978
Hero Dawn 100	100	959

Growth of car imports in Ghana





- **The number of imported cars almost doubled between 2005 and 2016**
- **Mostly used vehicles come into the country**

This pattern can be observed all over Africa!

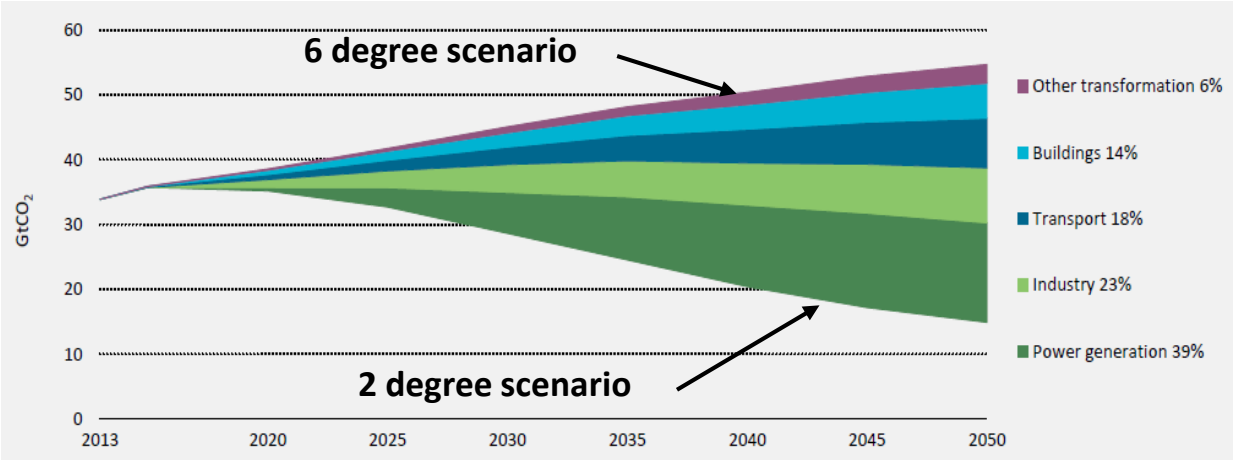
Impacts of vehicle fleet growth

Without a shift to low or zero emission vehicles, the strong vehicle fleet growth in Africa will lead to:

- Massive increase of air pollution especially in urban areas
- Massive increase of expenditures for oil imports
- Massive increase of greenhouse gas emissions

Transport and climate change

Climate change mitigation by sector

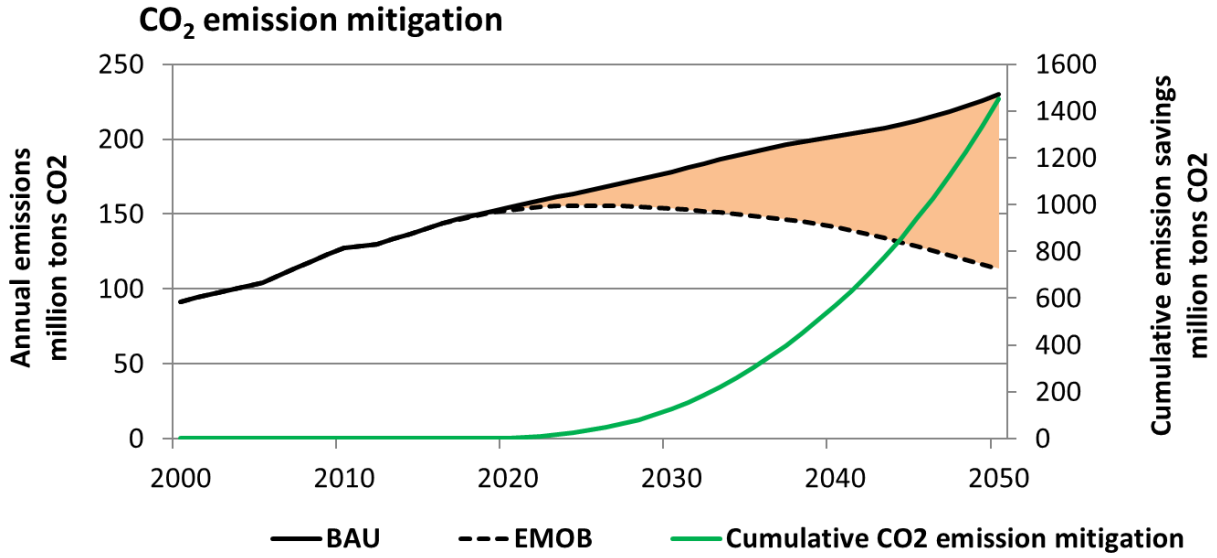


Source: ETP 2016 (IEA 2016)

- **Transport needs to contribute 18% to global carbon emission reductions to reach a 2 degree scenario**
- **Most of the vehicle fleet growth will take place in transitional and developing countries**

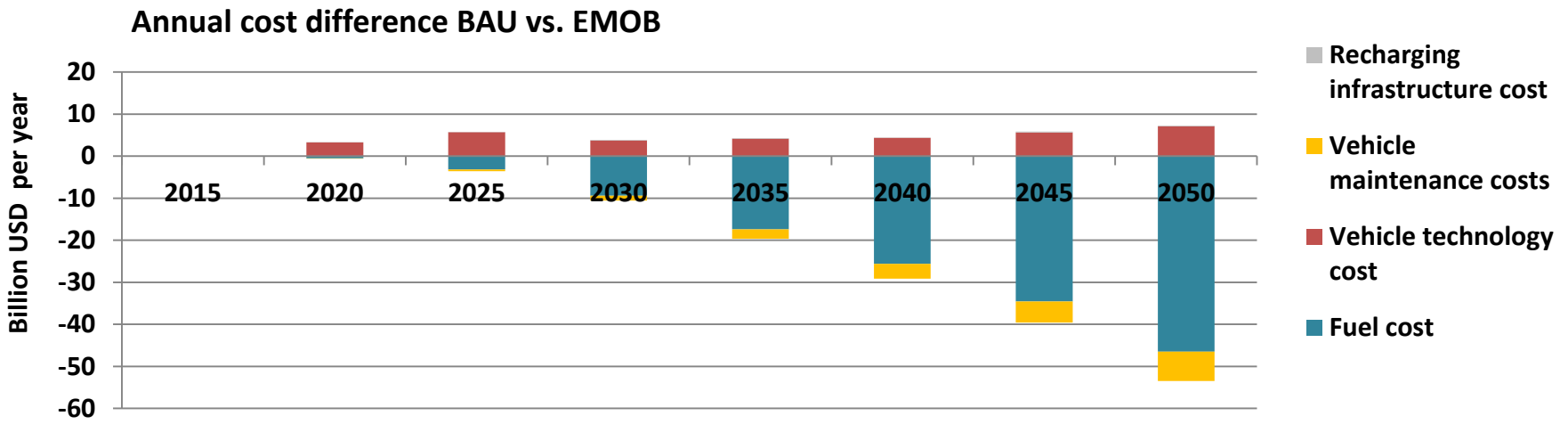
Climate targets cannot be reached without contribution from developing & transitional countries!

CO_2 mitigation potential of electric LDVs in Africa



- **Large scale deployment of electric vehicles can lead to a stabilization of carbon emissions at year 2010 levels by 2050**

Electric mobility will lead to reductions in overall transport costs



- **In the longer term, lower fuel and maintenance costs largely outweigh additional expenditures for electric cars and recharging infrastructure**

We all know about the challenges...

- **Electric vehicles: cost, range, charging time**
- **Recharging infrastructure: cost, density, charging time**
- **Power grid: cost, access, capacity limitations**

..we need to ask the right questions!

Electric mobility in Africa:

- **Is Electric Light Duty Vehicle range really *the* issue?**
  - Investigation of car usage and daily driving pattern in Africa
- **Is Public Recharging Infrastructure really *the* prerequisite?**
  - Assessment of consumer characteristics: income, housing situation
- **Are lack of power generation & transmission capacity and grid access really a challenge?**
  - Analysis of opportunities: off-grid solar charging, vehicle-to-grid applications and back-up power

How can we put in place the right policies, demonstrate the viability and finally finance the transition to electric mobility?

The Electric Mobility Programme

- It is a new global programme by UN Environment to foster the uptake of electric mobility
- It targets the reduction of energy use, greenhouse gas and air pollutant emissions from the transport sector
- The focus is on transitional and developing countries
- Together with regional partners, UN Environment supports the development of adequate policy packages, the set-up of pilot projects as well as strategies to finance the transformation towards electric mobility
- The program aims at regional replication and outreach

The Electric Mobility Programme

Electric Mobility		
Electric two and three wheelers	**Electric light duty vehicles**	**Electric buses**
• Economically viable • Technically mature • No dedicated charging infrastructure required • High growth rates of two wheeler market in Asia and Africa	• Close to break-even with conventional cars • Technically mature • Highest mitigation potential of global transport energy use and emissions	• Close to break-even on high capacity lines • High potential to improve local air quality • Manageable recharging infrastructure requirements

The program focuses on the most promising electric mobility applications

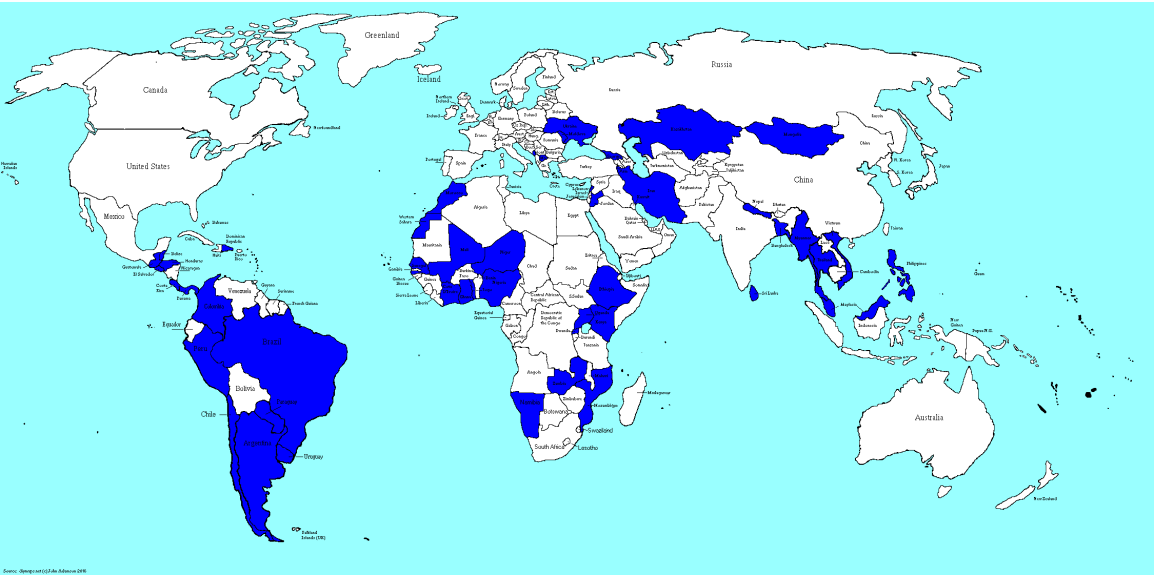
How we work

- **Interested countries approach UN Environment to support Electric Mobility projects**
- **Together, we develop the project and seek for funding**
- **We sign agreements with local partners**
  - **Ministries, government agencies**
  - **Non-government organizations**
  - **Academia**
- **Together with technical support from strategic partners, the project will be executed**

Electric Light Duty Vehicles

UN Environment currently works on electric LDVs in about 50 countries:

- Electric LDV work is often based on Global Fuel Economy Initiative (GFEI) activities
- **Target:** Support the development of **EV specific policy measures**



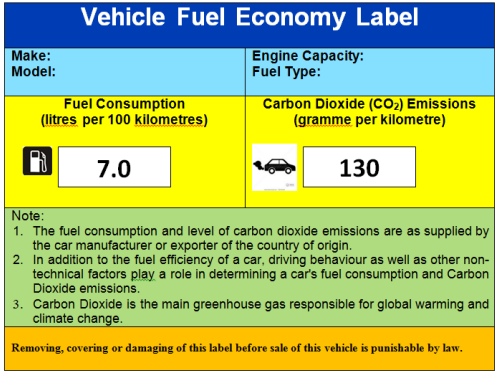
Dedicated EV policies:

- Tax breaks on registration, import & circulation tax as part of FE policy development
- Inclusion of EVs in regulatory measures i.e. in form of credits in FE standards, quotas etc.
- Information campaigns
- Dedicated soft measures: parking policies, exemption from access restrictions etc.

Electric LDV policies in Mauritius

- 2010: Work started with support to shift to low sulphur diesel
- 2011 Adoption of a CO_2 based feebate scheme
- 2011: 50 % excise duty waived on electric and hybrid cars in combination with 50% reduction of road tax
- 2013 Amendment of the feebate scheme
- 2016: feebate scheme replaced by a taxation system with additional incentives for electric vehicles, proposal of a scrappage scheme

Over time, dedicated EV policies have been developed, implemented and adopted



Vehicle Fuel Economy Label

Make: Model:	Engine Capacity: Fuel Type:
Fuel Consumption (litres per 100 kilometres)	Carbon Dioxide (CO_2) Emissions (gramme per kilometre)
7.0	130

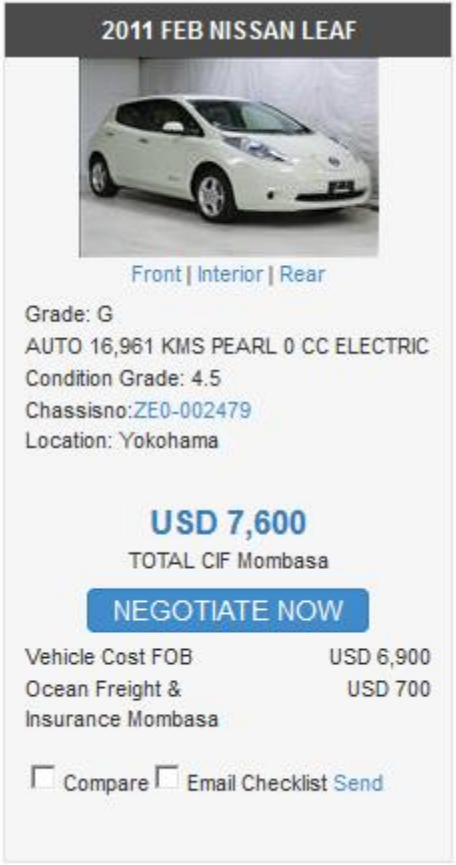
Note:
1. The fuel consumption and level of carbon dioxide emissions are as supplied by the car manufacturer or exporter of the country of origin.
2. In addition to the fuel efficiency of a car, driving behaviour as well as other non-technical factors play a role in determining a car's fuel consumption and Carbon Dioxide emissions.
3. Carbon Dioxide is the main greenhouse gas responsible for global warming and climate change.

Removing, covering or damaging of this label before sale of this vehicle is punishable by law.

Spotlight: Used imported EVs

- **Uptake of EVs in Africa will follow the pattern of conventional cars – import of used vehicles**
- **First used EVs from Japan and Europe are on sale now**
- **Policies needs to be in place to make the import of used EVs - opportunities exist since many African countries have high taxes on imported cars**
- **Kenya:**
  - Import duty: 25% of CIF value of the car
  - Excise duty: 20% of CIF value + import duty
  - VAT: 16% of CIF value + import duty + excise duty
  - IDF: 2.25% of CIF value or USD 50 (whatever is higher)

→ **There are plenty of opportunities to incentivise the purchase of used EVs through tax breaks**



Summary

- **Most countries in Africa will face massive vehicle fleet growth in the next 10 years**
- **We need to channel that growth into low emission transport, otherwise air pollution will render urban centres in Africa unlivable**
- **Opportunities for electric mobility in Africa are huge:**
  - Specific use profiles of African consumers support the deployment of electric vehicles
  - Infrastructure is currently being developed – no lock in!
  - Electric mobility provides the opportunity to shift to the use of local resources and even develop vehicle production capacities
  - Endowment with renewable energy sources is very favourable

Thank you!